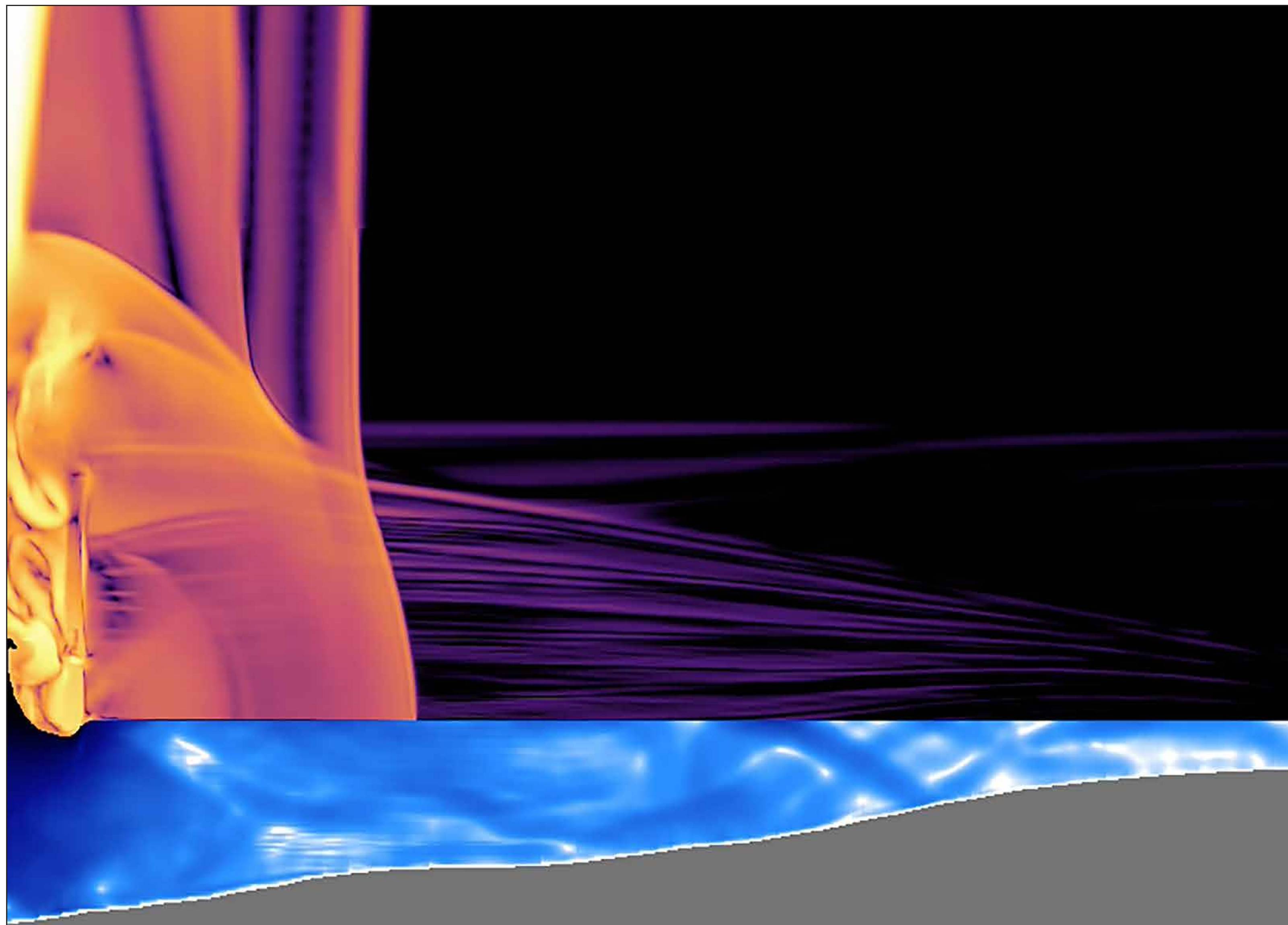


Asteroid Impact Risk Assessment

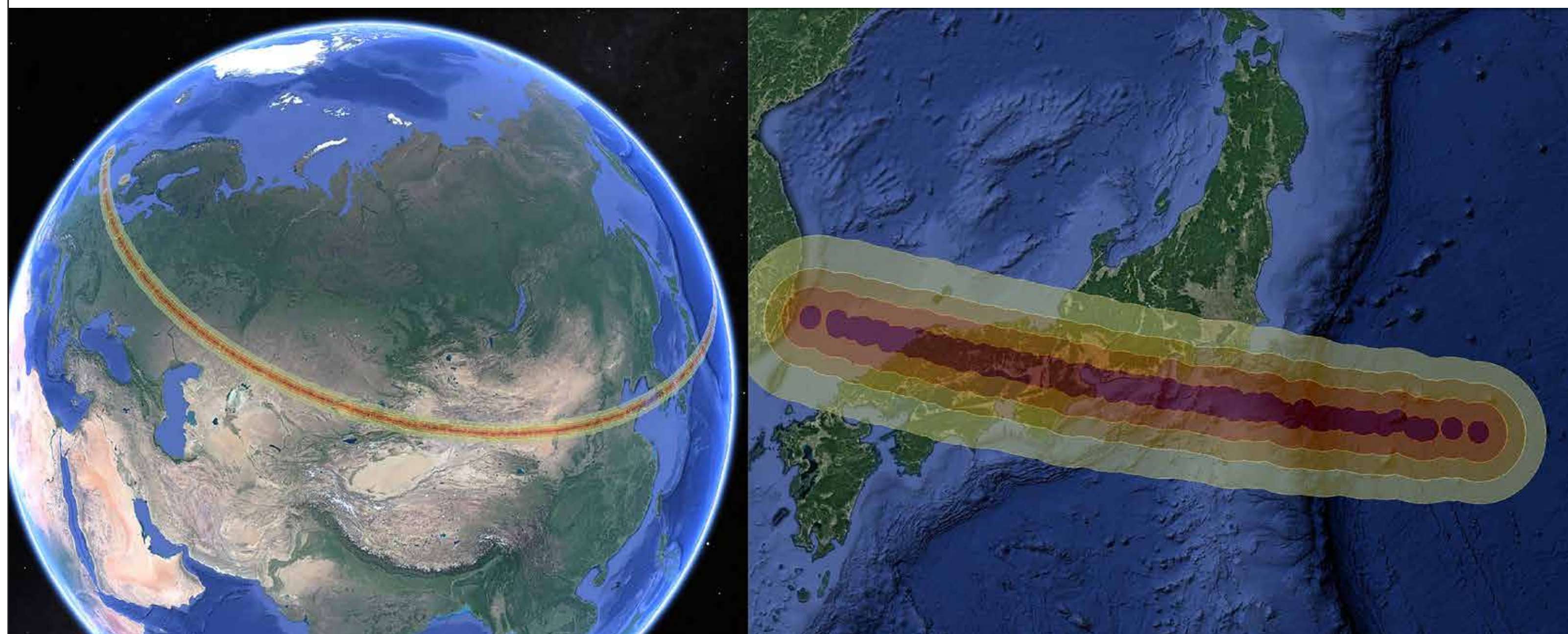
NASA's Asteroid Threat Assessment Project has developed an advanced probabilistic asteroid impact risk model to assess the potential threat posed by asteroids striking Earth. Running on the Pleiades supercomputer, the model is able to analyze millions of impact cases to determine the range and likelihood of damage due to blast waves, thermal radiation, tsunamis, and global effects for asteroids of different sizes and properties striking all over the world. High-fidelity simulations of asteroid entry and hazards are also performed to advance our understanding of key impact effects and refine analytic risk models. Impact risk results are used to support asteroid survey, mitigation, and response planning, and estimate potential consequences of specific impact scenarios if a threat were to be discovered.



Lorien Wheeler, Donovan Mathias, NASA/Ames



Simulation of tsunami and blast waves generated by the impact of a 1-gigaton, 100-meter diameter iron asteroid into the ocean, produced with the ALE3D hydrocode. Blue contours show water velocities, and orange contours show the velocity of air pressure waves emanating from the vertical entry column and the surface impact. This frame shows a snapshot right after impact when a column of water is rebounding up from the initial impact cavity. *Darrel Robertson, NASA/Ames*



Google Earth map of hypothetical damage zones modeled for an asteroid impact exercise performed at the 2017 Planetary Defense Conference. NASA's Probabilistic Asteroid Impact Risk model was run on the Pleiades supercomputer to evaluate damage zones and affected populations over the course of the five-day exercise, as information about the invented scenario evolved from initial detection with a large potential impact swath and little knowledge about the asteroid, to a specific, imminent impact threat. *Lorien Wheeler, NASA/Ames*